US Army Medical Research and Materiel

Technology Available for Licensing

Recombinant Vaccine Made in *E. coli* Against Dengue Virus

Features and advantages:

- **Large quantities of pure recombinant protein are easily produced by *E. coli* vector**
- **Elicits high titers of neutralizing antibody in mice**
- **Vaccine protected mice against lethal intracranial challenge with DEN-2**

Patent Status

antibodies in two out of three immunized rhesus monkeys

Point of Contact

This invention provides a recombinant protein that was successfully used as a vaccine to prevent dengue in mice and that could potentially be used to diagnose dengue. The vaccine is comprised of a portion of the structural envelope (E) glycoprotein and a portion of the nonstructural protein (NS1) from the dengue-2 (DEN-2) serotype that has been fused with Staphylococcal protein A. The recombinant protein is produced in *E. coli*, isolated, and purified.

Dengue viruses are estimated to cause several hundred thousand cases of dengue fever and the more severe dengue hemorrhagic fever and dengue shock syndrome, per year. The four dengue serotypes, DEN-1, DEN-2, DEN-3 and DEN-4, are distinguishable by complement-fixation assays and other means. Attempts to prevent DEN virus infections have focused on the production of a vaccine which will protect against all four serotypes. There are two categories of candidate vaccines currently being tested: live attenuated vaccines, and subunit vaccines, each of which has drawbacks. Recombinant subunit vaccines have the advantage of eliminating the risk of infectivity and have greater chemical stability. However, ent subunit vaccines, when produced by various expression vectors, provide only low titers of neutralizing antibody and are difficult to produce in large, pure quantities.

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The invention, when administered as a vaccine, fully d mice against morbidity and mortality following challenge with live DEN-2 virus.

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KEYWORDS: dengue; vaccine; diagnosis; recombinant protein

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